

REMARKS

Applicants thank the Examiner for the thorough examination of the application.

Claims 1, 3-10, 12, 13, 15-18 and 21-24 are pending in this application. Claims 1 and 10 are independent. By this Amendment, the specification is amended. No new matter is involved.

Reconsideration of the present application is respectfully requested.

Specification Objections

The Office Action objects to the specification. The Office Action indicates that the language “applying a data signal to the pixel electrode” on page 6, lines 15 and 16 of the main body of Applicants’ specification is somehow improper.

Applicants respectfully submit that the language objected to is completely proper to one of ordinary skill in the art. An active matrix liquid crystal display (AMLCD) has to display data provided to it, and the data is supplied to the AMLCD via a data line. The specification does not state that the data is provided to the pixel electrodes by a direct connection between a data line and a pixel electrode, as the Examiner appears to believe. Moreover, as is well known in the art, capacitive coupling between a data line and a pixel electrode, sometimes referred to as crosstalk, may also exist in AMLCDs. One of ordinary skill in the art recognizes this and views Applicants’ disclosure with this in mind.

Applicants fail to see anything unclear about, or otherwise wrong with, stating that “a storage capacitor 18 provided between the pixel electrode 14 and the gate line 4 at the previous stage plays a role to prevent a voltage variation in the pixel electrode 14 by charging a voltage in a period at which

a gate high voltage is applied to the previous-stage gate line 4 and discharging the charged voltage in a period at which a data signal is applied to the pixel electrode 14,” as is stated on page 6, lines 9-16.

One of ordinary skill in the art also realizes that the data signal is applied, in an active matrix LCD, via a drain electrode of an active matrix transistor, and that there is capacitive coupling of the data signal as well.

The Examiner notes that the pixel electrode is connected to the drain electrode of the TFT. Applicants agree and respectfully submit that one of ordinary skill in the art takes that fact into consideration in understanding the meaning of the language in issue.

The outstanding Office Action asserts that Applicants are redefining the word “applying.” Applicants disagree and respectfully submit that they are using the terminology “applying” in an accepted meaning to one of ordinary skill in the art, for reasons discussed above.

The outstanding Office Action makes reference to U.S. Patent Application Publication 2002/0145602 to Matsuda, and uses Fig. 10 of Matsuda to demonstrate that signals outputted by a transistor are different from signals input to that transistor. Applicants respectfully submit that this fact has nothing to do with the meaning of the language in issue for reasons discussed above.

Notwithstanding these arguments, Applicants have amended the specification to indicate that the data signal is applied to the source electrode 8. Moreover, Examiner Rude was contacted by one of Applicants’ below-named representatives on October 26, 2007 and he indicated that the proposed amendment to the specification appears to be acceptable.

Accordingly, Applicants respectfully submit that the language of the specification on page 6, in lines 15 and 16, as amended, is clear and proper, and that this objection should be withdrawn.

Rejection under 35 U.S.C. § 103(a)

Claims 1, 3, 5, 6, 8, 10, 12, 15, 17, 21-24 and 26-28 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,429,909 to Kim et al. (Kim) in view of U.S. Patent No. 6,313,889 to Song et al (Song). This rejection is respectfully traversed.

Because the rejection is based on 35 U.S.C. § 103, what is in issue in such a rejection is “the invention as a whole,” not just a few features of the claimed invention. Under 35 U.S.C. § 103, “[a] patent may not be obtained . . . if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.” The determination under section 103 is whether the claimed invention as a whole would have been obvious to a person of ordinary skill in the art at the time the invention was made. *See In re O’Farrell*, 853 F.2d 894, 902, 7 USPQ2d 1673, 1680 (Fed. Cir. 1988). In determining obviousness, the Examiner must explain what the differences between the claimed invention and the prior art are and provide objective factual evidence to support a conclusion that it would be obvious to one of ordinary skill in the art to achieve the claimed invention, which includes those missing features.

Furthermore, in rejecting claims under 35 U.S.C. § 103, it is incumbent on the Examiner to establish a factual basis to support the legal conclusion of obviousness. *See In re Fine*, 837 F.2d 1071, 1073, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). In so doing, the Examiner is expected to make the factual determinations set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 17, 148 USPQ 459,

467 (1966), and to provide a reason why one of ordinary skill in the pertinent art would have been led to modify the prior art or to combine prior art references to arrive at the claimed invention. Such reason must stem from some teaching, suggestion or implication in the prior art as a whole or knowledge generally available to one having ordinary skill in the art. Uniroyal Inc. v. F-Wiley Corp., 837 F.2d 1044, 1051, 5 USPQ2d 1434, 1438 (Fed. Cir. 1988), cert. denied, 488 U.S. 825 (1988); Ashland Oil, Inc. v. Delta Resins & Refractories, Inc., 776 F.2d 281, 293, 227 USPQ 657, 664 (Fed. Cir. 1985), cert. denied, 475 U.S. 1017 (1986); ACS Hospital Systems, Inc. v. Montefiore Hospital, 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984). These showings by the Examiner are an essential part of complying with the burden of presenting a *prima facie* case of obviousness. Note, In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification. In re Fritch, 972 F.2d 1260, 1266, 23 USPQ2d 1780, 1783-84 (Fed. Cir. 1992). To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be suggested or taught by the prior art. In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1970). All words in a claim must be considered in judging the patentability of that claim against the prior art. In re Wilson, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970).

Moreover, a showing of a suggestion, teaching, or motivation to combine the prior art references is an “essential evidentiary component of an obviousness holding.” C.R. Bard, Inc. v. M3 Sys. Inc., 157 F.3d 1340, 1352, 48 USPQ2d 1225, 1232 (Fed. Cir. 1998). This showing must be clear and particular, and broad conclusory statements about the teaching of multiple references,

standing alone, are not “evidence.” *See In re Dembiczak*, 175 F.3d 994 at 1000, 50 USPQ2d 1614 at 1617 (Fed. Cir. 1999).

Initially, Applicants note that this rejection is moot with respect to claims 26-28, which have been canceled.

Applicants continue to traverse this rejection for the reasons presented in the amendments filed on March 13, 2007, which are incorporated herein by reference, and for other reasons presented, below.

As pointed out in that Amendment, Applicants amended the claims under rejection to more clearly define over the applied art based on the telephone discussions with the Examiner. The Examiner has decided that the claims, as so amended, do not define over the applied art and Applicants respect his right to do so.

However, Applicants respectfully submit that the applied art does not render the claimed invention obvious for a number of reasons.

Independent claim 1 positively recites a combination of features, including: (1) pixel electrodes; (2) data lines adjacent to each of two opposed sides of the pixel electrodes for applying data signals to the pixel electrodes via thin film transistors on the substrate; (3) gate lines, disposed substantially perpendicular to said data lines for applying gate signals to the thin film transistors; gate dummy patterns parallel to said data lines adjacent to each of two opposed sides of the pixel electrodes and extending substantially the entire length of the pixel electrode portions adjacent and parallel to the data lines to overlap with at least one edge portion of said data lines and an edge portion of the pixel electrodes, and wherein the gate dummy patterns are physically located separate and apart from the gate lines.

Further, independent claim 10 positively recites a combination of features including: (1) pixel electrodes for driving liquid crystal cells; (2) data lines adjacent to each of two opposed sides of the pixel electrode for applying a data signal to said pixel electrode via thin film transistors on the substrate; (3) gate lines disposed substantially perpendicular to said data line for applying a gate signal to the thin film transistors; (4) gate dummy patterns parallel to said data lines adjacent to each of two opposed sides of the pixel electrodes and extending substantially the entire length of the pixel electrode portions adjacent and parallel to the data lines to overlap by about 0.5-1 μm with an edge portion of said data lines and an edge portion of said pixel electrodes, to thereby serve as a black matrix to shut off light leaked between said data lines and said pixel electrodes, and wherein the gate dummy patterns are physically located separate and apart from the gate lines.

Both references fail to disclose all of the claimed features for reasons presented, below, so no matter how these two references are combined, they cannot come us with, or render obvious, the claimed invention.

For example, neither applied reference discloses dummy patterns that are located separate and apart from the gate lines. Kim admittedly does not disclose this feature. Song does not disclose this feature, either. The Office Action indicates on page 7 that the Song's gate dummy patterns are physically located separate and apart from the gate lines because they are "separated by cutting at the "X" marks, f and g. Applicants respectfully disagree and note that Song merely indicates, in col. 16, that the right auxiliary gate line 1b is shorted at point b, and that as a result of this short, the portion of auxiliary gate line 1b above the short point b disconnected (at f). However, no physical gap is shown at (f). All that is shown at (f) is a cross, which is not a physical disconnection but, rather, is merely an electrical disconnection. In other words, the short point b is a low impedance point

through which current will preferable flow, and will be prevented from flowing into the upper portion of auxiliary gate line 1b. Most certainly, Song does not disclose using the laser to create a physical disconnection of different parts of auxiliary gate line 1b/. At most, Song disclosed intentionally providing a short circuit point in the auxiliary gate line, connecting the auxiliary gate line 1b and data line D's connect portion 21.

All this means is that the right gate line 1b above short point b is electrically disconnected. Song does not say that the right gate line above point b is physically disconnected. It appears to Applicants that the only physical disconnection shown in Fig. 19A is disconnect point a, which is clearly shown in Fig. 19A as a physical gap.

Furthermore, Figs. 19A and 19B only disclose a single, closed loop-shaped gate line surrounding each pixel electrode. Sing has no concept of physically separating any leg of this closed loop whatsoever. The only incentive to read such a feature into Song is provided by Applicants' disclosure, which may not properly be used against Applicant.

Thus, a basic premise of this rejection is shown to be without basis in Song, and a probable basis for this erroneous conclusion is improper hindsight reconstruction of the claimed invention based solely on Applicants' disclosure, because neither applied reference provides a basis for this conclusion.

Applicants also respectfully submit that Kim and Lee are so structurally different that they teach away from one of ordinary skill in the art turning to Song to modify Kim to arrive at, or otherwise render obvious, the claimed invention.

In this regard, Kim has no need to provide a connect portion extending perpendicular to the axis of a data line to overlap with a gate line, as does Song (e.g., connect portion 21), to achieve its

short circuit. One of ordinary skill in the art would not be motivated to modify Kim to add such a feature when it is not necessary to the proper operation of Kim's repair lines. This would actually provide a dis-incentive to modify Kim based on Song.

Additionally, Song discloses different types of gate line layouts, including a ring gate line layout, which uses auxiliary gate lines 1a and 1b, and a dual gate line layout, which does not use auxiliary gate lines 1a and 1b – see col. 9, lines 1-23. Kim, on the other hand only discloses using a dual gate line layout. The Office Action relies on applying Song's ring gate line layout to Kim's dual gate line layout to achieve a dummy pattern extending substantially the entire length of the pixel electrode adjacent and parallel to the data line. Applicants respectfully submit that this application of Song to Kim is unrealistic and that one of ordinary skill in the art would have no incentive to modify Kim's dual gate arrangement by adding a ring capacitor arrangement when it is not needed to make Kim work properly and would require additional materials, time and steps in the manufacturing process. Applicants respectfully submit that one of ordinary skill in the art would not be motivated to so significantly modify Kim to come up with the claimed invention.

Furthermore, both Kim and Song are assigned to the same assignee, and Song's earliest parent application was filed more than four years before Kim was filed, and that Kim was filed almost two years after the Song Application that matured into the Song patent. Applicants respectfully submit that Kim was probably aware of Song and did not choose to implement any of the proposed modifications of Kim that are suggested in this rejection. This is circumstantial evidence that the proposed modification of Kim in view of Song is based on improper hindsight reconstruction of the invention based solely on Applicants' disclosure.

Accordingly, the Office Action fails to make out a *prima facie* case of obviousness of the invention recited in independent claims 1 and 10.

Moreover, because dependent claims 3, 5, 6, 8, 21 and 22 depend from claim 1, and claims 12, 15, 17, 23 and 24 depend from claim 10, claims 3, 5, 6, 8, 12, 15, 17 and 21-24 are not obvious at least for the reasons that claims 1 and 10 are not obvious, as stated above.

Reconsideration and withdrawal of this rejection of claims 1, 3, 5, 6, 8, 10, 12, 15, 17, 21-24 and 26-28 under 35 U.S.C. § 103(a) are respectfully requested.

Claim 25 stands rejected under 35 U.S.C. § 103(a) as unpatentable over Kim in view of Song, as applied in the rejection traversed above, and further in view of U.S. Patent 5,657,101 to Cheng. This rejection is respectfully traversed as moot because claim 25 was canceled in the amendment filed on March 13, 2007.

Reconsideration and withdrawal of this rejection of claim 25 under 35 U.S.C. § 103(a) are respectfully requested.

Claims 4, 7, 9, 13, 16 and 18 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Kim in view of Song, as applied in the rejections traversed above, and further in view of U.S. Patent 5,734,450 to Irie et al. (Irie). This rejection is respectfully traversed.

Applicants respectfully submit that one of ordinary skill in the art would not have any incentive to provide such a recess because one of ordinary skill in the art would not have the incentive to provide for disconnection of repair lines in Kim which only discloses connecting a repair line, not disconnecting a repair line. Additionally, whereas Kim is directed to correcting open circuits, Irie is directed to correcting short circuits, i.e., just the opposite of what Kim is directed to

Further, the quoted (in the rejection) "narrow part 44," which is shown in Fig. 2, is just a narrow portion of the gate electrode 41 between the gate electrode 41 and gate line 1, and is not a recess or hole in a repair line.

So, even if the improper Kim-Song reference combination were modified in view of Irie, the resulting reference combination would not have a recess in a repair line, as recited.

Further, with respect to claims 7 and 16, because the combined references do not render obvious the claimed recess, they do not render obvious providing a protrusion to cover the non-existent recess. Moreover, the Office Action fails to explain how, if a protrusion covers a recess, one of ordinary skill in the art uncovers the recess to make the recited disconnection. It appears to Applicants that the proposed rejection achieves an inoperative device for the intended purpose of disconnecting a line. In this regard, Applicants direct the Examiner's attention to In re Sponnoble, 405 F.2d 578, 587, 160 USPQ 237, 244 (CCPA 1969), which indicates that references taken in combination teach away when they would produce a "seemingly inoperative device."

Accordingly, this rejection of claims 4, 7, 9, 13, 16 and 18 under 35 U.S.C. § 103(a) is improper and should be withdrawn.

Conclusion

All of the stated grounds of objection and rejection have been properly traversed, accommodated, or rendered moot. It is believed that a full and complete response has been made to the outstanding Office Action, and that the present application is in condition for allowance.

However, if there are any outstanding issues, the Examiner is invited to telephone Robert J. Webster (Reg. No. 46,472) at (703) 205-8000 in an effort to expedite prosecution.

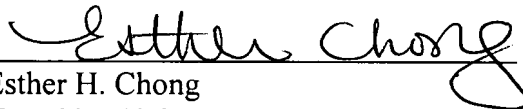
Applicants respectfully petition under the provisions of 37 C.F.R. § 1.136(a) and § 1.17 for a one-month extension of time in which to respond to the Examiner's Office Action. Please charge the extension of time fee of \$120.00 to Deposit Account No. 02-2448.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or to credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17, particularly extension of time fees.

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Respectfully submitted,

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